Original Research Article

SAGE Open Medicine

SAGE Open Medicine
Volume 10: 1–9

DOI: 10.1177/20503121221122414
journals.sagepub.com/home/smo
SAGE

Physician–patient communication in vascular surgery: Analysis of encounters in academic practice

Abbygale M Willging[1], Elvis Castro[1] and Jun Xu[2]

Abstract

Objective: To assess physician–patient communication in vascular consults with the aim of identifying areas for improvement.
Introduction: Shared decision-making in clinical consults can enhance patient outcomes. Its potential benefits are significant in vascular surgery, where decisions are dependent on the patient's definition of quality of life and outcomes are influenced by significant lifestyle changes.
Methods: In this qualitative cross-sectional study, encounters between five vascular surgeons and their patients with two asymptomatic vascular diseases were audio recorded, transcribed, and analyzed for validated sociolinguistic statistics. The nine-item shared decision-making questionnaire was used to gauge subjective patient perspective.
Results: Physicians spent an average of 19 min and 28 s (±8:55) per consult and an average of 12 min and 7 s talking to the patient (±6:33). Physicians used formalized language about 10.3 times an encounter (±8.39), checked for understanding 6.4 times (±4.84), and asked more close-ended than open-ended questions (10.5 ± 6.15 versus 4.6 ± 2.37). Physicians accounted for 46.34% of utterances (±6%) and averaged 5.8 interruptions per encounter (±4). Patients and company accounted for 53.66% of total utterances (±6%) and averaged 10.1 clarification questions (±9.78). The average nine-item shared decision-making questionnaire Likert-type score per patient was 2.82 on a range of −3 to +3 (±0.33), with positive numbers indicating agreement. On average, patients strongly (+2) or completely (+3) agreed that physicians covered the nine criteria.
Conclusion: The 9-item shared decision-making questionnaire data showed that patients mostly felt their physician was adequate in exhibiting shared decision-making behaviors. However, physicians asked closed-ended questions that elicited "yes/no" or brief responses, continuously interrupted patient narratives, and rarely checked for understanding from their patients. These subliminal behaviors restrict patient participation in shared decision-making and may be corrected via longitudinal intervention.

Keywords

Shared decision-making, asymptomatic disease, vascular surgery, communication skills

Date received: 14 April 2022; accepted: 1 August 2022

Introduction

Clinical decision-making is evolving from a physician-centered, paternalistic model to one where patients are empowered to participate in their own care.[1] Technological advances in medicine, surgery, and an overall paradigm shift toward individualized treatment plans have created more viable treatment options for patients and their physicians to select from.[2] Furthermore, increased exposure within the lay population to a surfeit of health information from sources such as the Internet has highlighted the need for better physician–patient dialog to jointly navigate this information. These forces are shaping clinical decisions through a process that gives consideration to both clinical heuristics and patient values, the process of shared decision-making (SDM).[1] However, there are common discrepancies in how physicians and patients perceive this new role.[1,3,4] In one study, 38% of patients believed they should share the decision-making equally with their physician and 10% believed they

[1]University of Iowa Carver College of Medicine, Iowa City, IA, USA
[2]Division of Vascular Surgery, Department of Surgery, University of Iowa Hospitals and Clinics, Iowa City, IA, USA

Corresponding author:
Jun Xu, Division of Vascular Surgery, Department of Surgery, University of Iowa Hospitals and Clinics, 200 Hawkins Drive 1524 JCP, Iowa City, IA 52252, USA.
Email: jun-xu-1@uiowa.edu

should hold the most active role; in contrast, not one physician believed the patient should have the dominant role and only 20% believed it should be shared equally.[4]

Whether patients play the dominant role or share it with their physician, increased patient involvement in decisions has been associated with positive outcomes in several primary care settings.[4–9] While these studies have focused on other care settings (primary care, oncology, glaucoma clinic, etc.), several acknowledge limitations regarding the uniqueness of surgical specialty consults and call for research to be more focused.[5,7,8,10] Here, we focus on the field of vascular surgery, which poses its own need for, and challenges to, SDM. In vascular surgery, it is common for medical and surgical therapy to be equally reasonable options for patients. The "best" treatment option often depends on the patient's values and personal definitions of quality of life, especially since many patients are in late, fragile stages of life.[1] Surgical interventions may have unintended consequences such as persistent pain and suffering, prolonged hospital stay, inability to return to preoperative function, and so on.[1,11] Preoperative conversations often fail to address all of these potential detriments, so many potential candidates opt for a procedure without complete understanding of its risks, benefits, or alternatives. In one study of 1034 preoperative patients surveyed after they went through informed consent, 33% exhibited knowledge deficits including not knowing what procedure was being performed and the existence of alternatives to elective surgery.[11] In another study of the orthopedic patient population, less than 10% of the content communicated addressed patient lifestyle preferences or psychosocial aspects.[7]

Specific to vascular surgery, positive outcomes often require health-related behavioral changes in addition to the treatment, such as the cessation of smoking or diet alteration. Patient involvement in the preoperative decision has been shown to enhance adherence to these crucial behavioral changes, increasing the likelihood of a positive outcome for that patient.[4–6,9] These components of SDM are paramount to preoperative discussions because they implicate a patient's personal values, such as their ability to live the life they desire. Elective surgeries meant to prevent possible downstream adverse outcomes in asymptomatic patients, as is often the case with abdominal aortic aneurysms and carotid stenosis, especially require conversations to delve deeper than surgical feasibility and into patient's expectations and desires.[1] Despite the prevalence of SDM and its benefits in vascular surgery, little research has been conducted to study consultation elements that promote or diminish the process. In this study, we examine interactions between five vascular surgeons at an academic hospital and their new patients presenting with asymptomatic abdominal aortic aneurysm or asymptomatic carotid stenosis. By evaluating established communication variables, we aim to assess the physician–patient roles in these clinical consults where providing surgery or selecting non-procedural treatment are equally viable options. We hope to better understand the values underpinning vascular decisions in which there is a degree of uncertainty as to the best course of action for that particular patient.

Methods

This study was designed as a qualitative cross-sectional design.

Subject screening and selection

This study was first approved by the University of Iowa Hospitals and Clinics Institutional Review Board (IRB ID: 201910708). The physician population consists of five vascular surgeons at two associated academic clinics. With their consent, we screened their clinic schedules using EPIC to identify new patients presenting with asymptomatic abdominal aortic aneurysm or asymptomatic carotid stenosis. These asymptomatic conditions were chosen as exemplars of vascular diseases with multiple viable courses of treatment that allow the patient to prioritize the possible pros and cons of each by individual preference. Potential candidates were approached on their appointment day before their surgical consult and all subjects were taken through the consent process by one of the researchers. Inclusion criteria consisted of new patients referred to the clinic with possible asymptomatic abdominal aortic aneurysm or carotid stenosis. Subjects were excluded if either of these conditions were not their true primary concern for the visit or they were not seen personally by the vascular surgeon. Between January 2020 to September 2021, 51 potential candidates were obtained from screening, 37 were missed or canceled due to the COVID-19 pandemic, 14 were approached, and 12 consented (Figure 1). One recording was discarded because their correct diagnosis was an aortic occlusion rather than an aneurysm and another was discarded because a nurse practitioner covered the entire consult due to the doctor being in surgery. Ten clinic recordings were used for data analysis.

Data collection

The researcher's role in this study was that of a complete observer.[12] Outpatient consults were audio recorded using a Sony IC Recorder, switched on by a researcher, left in with the patient after they were roomed by the staff nurse, and removed after the surgeon concluded the consult. Researchers were not present in the room during the surgical consult. After the consult, patients were asked by the researcher to complete the nine-item SDM questionnaire (SDM-Q-9) to assess their perception of the surgeon's SDM skills (Figure 2). The SDM-Q-9 consists of nine Likert-type scaled questions validated by pyschometric testing as an acceptable tool for assessing patient perspective.[13] This tool was utilized in

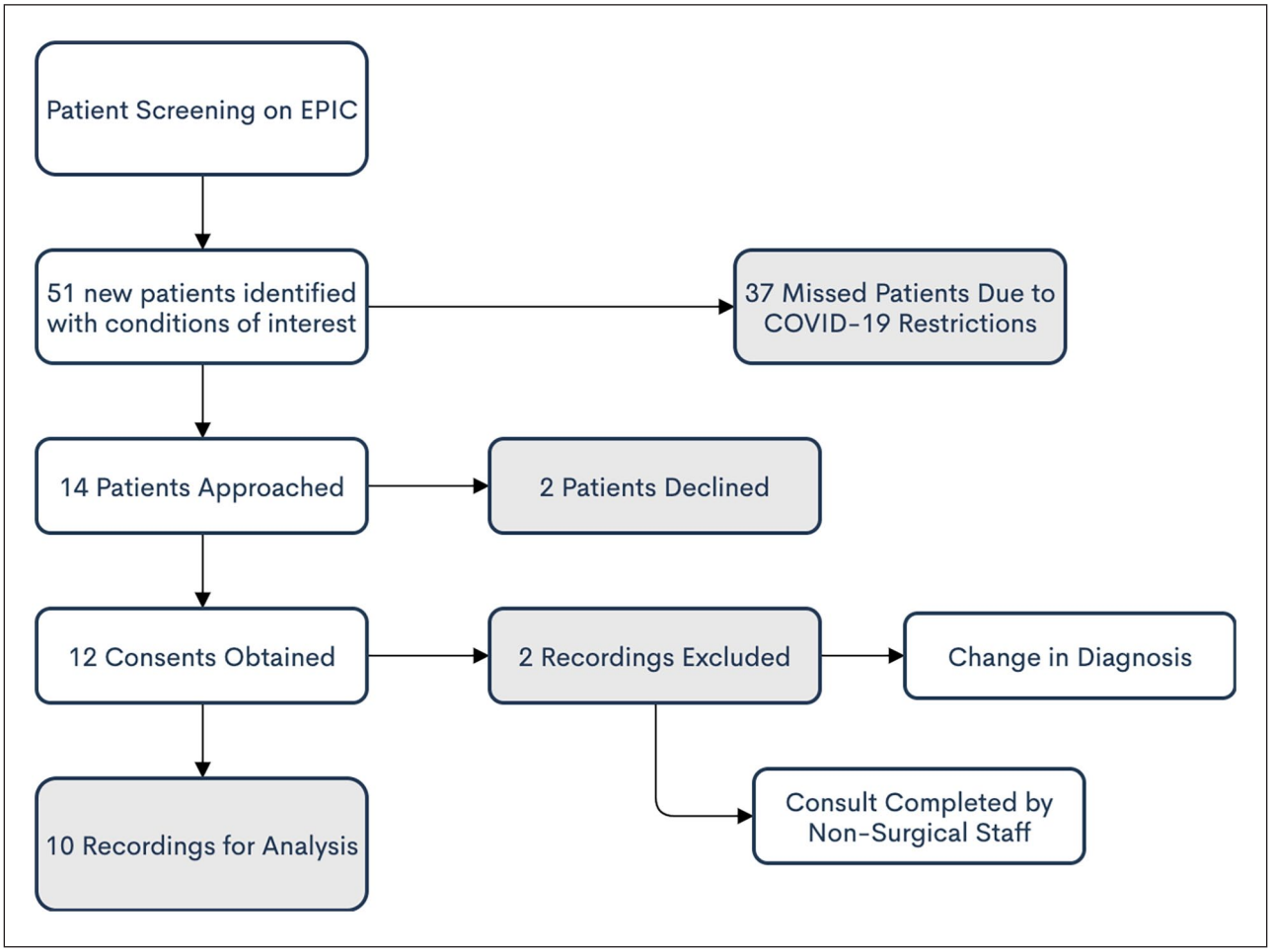

Figure 1. Patient inclusion and exclusion flow chart.

this study solely as a measure of patient perspective for a point of comparison against the observed qualitative data. The full recordings were directly uploaded to Rev's Transcription Service. When the transcripts were completed, they were manually anonymized (removing names, cities of origin, and other identifying information), numbered, and trimmed to include only the time when the surgeon was present in the room.

In qualitative studies, sample size is determined by data sufficiency and is often quite small compared to quantitative study design (10–30 participants). The researchers decided data sufficiency was reached when new interviews produced redundant patterns already noted in earlier comparisons.[12] The standards of quality used traditionally in quantitative data are not sufficient in determining the quality of qualitative research. Instead, trustworthiness is determined by credibility, transferability, and dependability. To achieve credibility, the researchers employed persistent observation, investigation triangulation, and data triangulation. Data collection occurred over a span of 2 years, in two associated clinic sites, and among patients of varying genders, ages, and personal experiences. Transferability is determined by the reader's judgment and dependability was addressed by an audit trail throughout each researcher's analysis, which was later reviewed as a team.[14]

Qualitative analysis

Variables were defined by the analysis team for coding. The individual transcripts were read and coded accordingly using NVIVO software (NVivo qualitative data analysis software; QSR International Pty Ltd. version 12, 2018). Coders marked questions asked by the physician (grouped further into open, closed, or check-for-understanding format), physician interruptions, use of humor, emotional cues from patients, positive responses to these cues by physicians, and use of formalized or medical terminology (see Table 1 for decided-on definitions). Two of the eight transcripts were double coded for interrater reliability, obtaining a Kappa of 0.80. The individual coders then met to discuss discrepancies and decide on final data used for statistical analysis.

The 9-item Shared Decision Making Questionnaire (SDM-Q-9)

[Example] **Please indicate which health complaint/problem/illness the consultation was about:**

[Example] **Please indicate which decision was made:**

Nine statements related to the decision-making in your consultation are listed below. For each statement please indicate how much you agree or disagree.

1.	**My doctor made clear that a decision needs to be made.**					
	completely disagree	strongly disagree	somewhat disagree	somewhat agree	strongly agree	completely agree
2.	**My doctor wanted to know exactly how I want to be involved in making the decision.**					
	completely disagree	strongly disagree	somewhat disagree	somewhat agree	strongly agree	completely agree
3.	**My doctor told me that there are different options for treating my medical condition.**					
	completely disagree	strongly disagree	somewhat disagree	somewhat agree	strongly agree	completely agree
4.	**My doctor precisely explained the advantages and disadvantages of the treatment options.**					
	completely disagree	strongly disagree	somewhat disagree	somewhat agree	strongly agree	completely agree
5.	**My doctor helped me understand all the information.**					
	completely disagree	strongly disagree	somewhat disagree	somewhat agree	strongly agree	completely agree
6.	**My doctor asked me which treatment option I prefer.**					
	completely disagree	strongly disagree	somewhat disagree	somewhat agree	strongly agree	completely agree
7.	**My doctor and I thoroughly weighed the different treatment options.**					
	completely disagree	strongly disagree	somewhat disagree	somewhat agree	strongly agree	completely agree
8.	**My doctor and I selected a treatment option together.**					
	completely disagree	strongly disagree	somewhat disagree	somewhat agree	strongly agree	completely agree
9.	**My doctor and I reached an agreement on how to proceed.**					
	completely disagree	strongly disagree	somewhat disagree	somewhat agree	strongly agree	completely agree

Martin Härter & Isabelle Scholl, University Medical Center Hamburg-Eppendorf, Germany

Figure 2. The SDM-Q-9 questionnaire that patients completed following their consult.

Table 1. Variable definitions and results.

Variable	Working definition	Result (average)	Range
Encounter length	Time from the surgeon's first dialog to their closing dialog. Obtained from Rev.com by subtracting the entry time from the exit time	19:28 + 8:55	7:59–32:01
Time of doctor speaking	Measured manually with a stopwatch while listening to recordings	60% + 17%	31.3%–88.5%
Utterances (physician/total)	Each individual dialog line on the transcript counts as one utterance. Therefore, the total number of utterances is equal to the number of times that person's name appears in the speaker column of the transcript during the trimmed consult time	46.34% + 6%	37.2%–54.8%
Open-ended questions	Physician questions that do not elicit a yes, no, or static response. These questions must leave room for explanation or longer discussion from the patient	4.6 + 2.37	1–8
Closed-ended questions	Physician questions that elicit a yes, no, or static response. Any question that could be answered in one word or that the physician implied a certain form of answer was included in this category	10.5 + 6.15	3–21
Checking for understanding questions	Physician questions that aimed to assess patient understanding of information they had previously received during the encounter. "Okay?" was included when it followed a certain line of information, but not when it stood alone	6.4 + 4.84	1–14
Clarification questions	Patient questions that prompted affirmation, correction, or further information from the physician	10.1 + 9.78	0–31
Interruptions	Times when the physician injected an utterance before the patient had finished their sentence, thought, or dialog. These moments were often (but not always) marked by a,. . ., or divided sentence in the transcript	5.8 + 4.08	2–14
Humor	Patient or surgeon attempts to reduce tension and increase comfort via a joke, banter, or laughing	9.4 + 8.00	0–24
Emotional cues	Patient describes a feeling or inserts an emotionally salient statement into the conversation	2.1 + 2.02	0–6
Positive response to emotional cues	The physician adequately acknowledges, reassures, or addresses (responds to) the emotional cue following the patient's remark	61% + 22.77%	33%–100%
Formalized or medical terminology	Doctor uses language not commonly used in casual, everyday dialect	10.3 + 8.39	2–25
SDM-Q-9 Likert score	A measure of patient perception of the physician's shared decision-making behaviors. A Likert-type Scale survey was completed post-consult, ranging from −3 (completely disagree) to +3 (completely agree, ±2 = strongly agree/disagree, ±1 = somewhat agree/disagree). N/A responses were not counted or included in averages	2.82 + 0.33	2.67–3

SDM-Q-9: 9-item shared decision-making questionnaire.

Statistical analysis

The coded data from individual transcripts was then counted, pooled, and summarized by averages, standard deviation, and ranges. Each variable was described regarding the pooled data, as well as averaged for each individual doctor. The strength of association between variables was calculated using the non-parametric Spearman's rank correlations coefficient test. R_s values greater than 0.5 were considered strongly directly correlated following standard grading, while values less than −0.5 were considering strongly negatively correlated. Moderate correlations were between 0.5 and 0.3 or −0.3 and −0.5; weak/no correlation was defined as anywhere between −0.3 and 0.3. Significance was determined by a p-value less than 0.05.

Results

Patient characteristics

Transcripts were obtained from 10 patients visiting between January 2020 and June 2021. Ages of the six male and four female patients ranged from 64 to 80 years old (Table 2). Of these, six presented with carotid stenosis and four presented with abdominal aortic aneurysm. All included consults were from clinically asymptomatic patients.

Questionnaire data

The average SDM-Q-9 Likert-type score was 2.82 on a range of −3 to +3 (±0.33). This tool evaluates patient's perception

Table 2. Characteristics of included participants.

Gender	Age	Condition	Surgeon
Male	64	CS	A
Male	73	CS	B
Male	66	CS	A
Male	71	AAA	C
Female	69	AAA	C
Male	74	CS	D
Female	78	CS	D
Female	77	AAA	E
Male	77	AAA	A
Female	80	CS	A

CS: asymptomatic carotid stenosis; AAA: asymptomatic abdominal aneurysm.
AAA and CS patients were included. Individual surgeons are anonymized with letters A–E. Patient sex was recorded based on administrative data.

of whether SDM took place, with positive numbers indicating agreement and negatives indicating dissent. Not one patient marked a disagreement with any of the statements.

Observational qualitative data

All variables and their results are summarized in Table 1. Physicians spent an average of 19 min and 28 s (±8 min and 55 s) in the consult room and an average of 12 min and 7 s of that time talking (±6 min and 34 s). The visit duration varied significantly, with the longest being over 30 min and another lasting just under 8 min. Encounter length was not significantly correlated with the number of interruptions, checking for understanding opportunities, or SDM-Q-9 Likert-type score ($r_s = 0.16, 0.16, -0.02$, $p = 0.66, 0.65, 0.96$). The use of humor and emotional cues was moderately correlated with longer visits, but not at a significant level ($r_s = 0.43, 0.46$, $p = 0.22, 0.19$, respectively). Generally, the more questions (whether closed or open) asked by the physician, the longer the encounter ($r_s = 0.68, 0.62$, $p = 0.03, 0.057$). Patients and their company accounted for a slight majority of utterances (53.67%) while physicians accounted for the remaining 46.33% (±6%). However, physician utterances were often lengthier than patients' and their company; physicians spoke for 60% of the visit duration (±17%).

Physicians asked far more closed-ended questions than open-ended (10.5 ± 6.2 versus 4.6 ± 2.3 respectively) and checked for patient understanding 6.4 times (±4.8, range 1–14):

Doctor: "Okay? Questions?"
Patient: "Um. In the beginning, you said it's where they-"

In the longest encounter, the physician only checked for understanding three times over the total 32 min of discussion. Physicians further used unexplained medical language about 10.3 times per encounter (±8.4, range 2–25): ". . . transcarotid artery revascularization; it's a stenting procedure;" ". . . a situation of flow reversal in the carotid artery;" "Then you can have an aspiration. Pneumonia, something bad . . ." They further interrupted patients an average of 5.8 times (±4, range 2–14):

Patient: "I- I have . . ."
Doctor: "And if something is pushing against it, it's not going to open."
Patient: "and that's . . . that's what . . .
Doctor: I'm very good at this, okay?

Patient levels of participation varied greatly. On average, patients and their company asked 10.1 clarification questions (±9.8).

Doctor: ". . . it's carotid, uh, it's called transcarotid stenting."
Patient: "So with that flow, you take it out and you put it back in?
Doctor: "Yeah. Because as we're reversing flow, because I don't want you to be losing blood."
Patient: "I understand."

One patient didn't ask a single question, while others asked over 30. Patients were more likely to ask clarification questions when the physician utilized a higher number of closed-ended questions ($r_s = 0.72$, $p = 0.02$). Patients inserted emotional cues an average of 2.1 times an encounter (±2.0, range 0–6), and 61% of these were acknowledged or addressed by the physician (±23%). The number of emotional cues implemented was strongly, negatively associated with how the physician responded, meaning patients tended to bring up emotional topics more frequently when the physician failed to address them adequately ($r_s = -0.77$, $p = 0.04$). Humor was employed about 9.4 times per consult (±8, range 0–24), both by the patient (52%) and physician (48% ± 13%).

Physician-specific results

Individual doctors varied in their use of SDM variables. For example, Doctor A was proficient in checking for understanding (averaging 11.5 times an encounter), while three other doctors averaged less than three patient assessments. However, Doctor A also interrupted patients the most of any physician (averaged 7.5 times an encounter versus 7, 4.5, 3.5, and 5). Most doctors asked between 1 and 3× as many closed-ended questions than open-formatted questions, but Doctor C's ratio was closer to 5. Overall, physicians responded positively to emotional cues 61% of the time, but this also varied based on individual physician. No physician responded adequately 100% of the time a cue occurred (range 33%–83%). This individual variation reflects the communication styles of each physician and indicates areas of improvement for each.

Discussion

Patients have commonly ranked communication as one of the top three needed skills in a physician and yet it is frequently rated unsatisifactory.[5] In this study, we aimed to assess physician–patient communication in vascular consults and identify areas for potential improvement. Our results show discrepancy between patient perception and obtained qualitative data. Our measure of patient satisfaction, the SDM-Q-9 questionnaire, inversely showed that patients felt their surgeons were adequate in SDM behaviors. By this measure, the surgeons facilitated patient involvement in the discussion. However, direct observation via audio recording demonstrated several detrimental behaviors to SDM, such as infrequent checks for understanding and several interruptions. This is consistent with past observational studies assessing physician communication. Systematic review of the SDM-Q-9 tool has raised questions of its sensitivity to change, noting that the measure showed no or little significant changes between study groups.[13] This may explain why the patient assessment contrasts with the obtained qualitative data. The obtained qualitative data focused on several physician behaviors that have been identified in previous literature to facilitate or deter patient involvement in the decision-making process. Factors implicated to encourage participation included question formatting (open versus closed-ended), encounter length, encouraging language, humor, clarification opportunities, empathetic responses, and provoking patient perspective.[1,4,5,9,10,15] Interruptions, formalized behavior, biomedical questioning, and passive rejection have been shown to have the opposing effect.[2,4,5,9,10,15] Moreover, patient perceptions of their relationship with the physician affect whether they will voice concerns or further discussion and clarification.[15,16]

In this study, where communication was rated satisfactory, the discrepancy between patient perception and measured physician behavior may indicate that the patient population is not proficient in identifying behaviors that could be deterring SDM. The overwhelmingly positive ratings may further reflect an intrinsic trust in their physician that detracts from a thorough evaluation.[15] Further research should explore these possibilities, as they may implicate a larger ethical responsibility for physicians; not only might we pursue areas for improvement in our behavior but we may be further responsible of self-determining these areas in the absence of patient prompting.[15] It is crucial for physicians to take on this responsibility so their patients can reap the benefits of SDM, including increased patient satisfaction, better adherence to medical recommendations and health-related behavioral changes, and better understanding of their disease state.[1,4–10,15]

On average, vascular surgeons spent more time with patients than ophthalmologists, orthopedic surgeons, and general surgeons (19.5 min versus 8, 16, and 13.1).[4,8] Perhaps this is because of the unique patient population seen by vascular surgeons; patients tend to be older with significant comorbidities that warrant further discussion. However, vascular surgeons demonstrated some of the above behaviors commonly attributed to inadequate communication, such as interrupting patient narratives and using formal or biomedical language.[4,5,9,10,15] Every encounter included more than two interruptions, with one encounter having 25. It is possible that physicians are unaware they are disrupting patient dialog. It is also possible physicians believe that interrupting patients prevents lengthy consults. However, our data and pooled data from other conversational analysis studies have failed to show a substantial correlation between interruptions and shorter visits.[9]

In fact, time constraints are often the justification, consciously or not, for inadequate SDM behavior.[3,8,17] Wanting to increase clinic efficiency may influence surgeons' question structure, likelihood of checking for patient understanding, and response to emotional cues—all variables implicated in complete SDM. Although vascular surgeons asked a lower percentage (67%) than ophthalmologists (94%),[4] our data support the notion that physicians consistently ask more closed- than open-ended questions. They often believe eliciting a brief, concise response moves discussion along faster.[3,8,9] In some cases, this is true and the use of closed-ended questioning certainly has its place in the discussion;[7,10] however, its overwhelming use can eliminate opportunities for patient's to reveal their true attitudes and understanding.[4,10] These opportunities are encouraged by open-ended formatting, which has not been shown to increase encounter length and should be especially encouraged in vascular surgery where patient attitudes are paramount to the final decision.[4]

Open-ended questioning further opens the conversation to emotional cues. The patient's emotional response to vascular disease and its effect on their lifestyle is critical to selecting the best treatment plan. This is an area, however, where physicians generally struggle.[1,7,8,10] While patients often provide emotional cues, a study on lung cancer patients suggests physicians only respond empathetically to 10% of them.[10] Again, physicians may be concerned that emotional salient conversations take longer and reduce clinic efficiency; however, several studies have demonstrated that the opposite may be true.[8–10] Two prior studies suggest that patients repeat their concerns when the first emotional cue is not addressed adequately,[8,10] which could explain why the amount of emotional cues was higher in our encounters where physicians responded inadequately to such cues. Our patients did not express as many emotional cues, but our vascular surgeon population responded positively more frequently than both oncologists and thoracic surgeons (61% versus 13.7% and 6.4%).[10]

The SDM component most commonly lacking from our discussions was, not surprisingly, checking for patient understanding. Previous studies have shown how rarely this

occurs,[3,4,6] as well as how crucial it is to complete clinical decision-making.[5,6,16] Especially when our physicians frequently use formalized or medical terminology, confirmation that patients actually understand the terms is paramount. Checking for understanding regularly may prompt further lay language explanations, through which patients are more likely to gain complete understanding and thus further trust their physician.[2] It seems proficiency in this behavior is highly individual to the doctor, as physician-specific averages showed stark differences. Therefore, interventions need to be personalized to the physician's communication style to efficiently improve patient experience.

Physicians' continual need to grow as practitioners is represented by continuing education programs and, arguably more often, informal feedback in daily clinical practice.[17] When it comes to individual communication practices such as shared decision-making, these informal learning opportunities may be the most effective route for change. For example, we noticed a high volume of interruptions in our data. One interventional study simply tried handing physicians a note reminder before the encounter, and saw effective changes.[9] Numerous other studies have similarly demonstrated realistic and effective ways to implement such changes.[4,5,9,10,15] Some potential options include sporadic peer observation or scheduled peer reflection and consultation.[17] Such a work environment designed to stimulate personal reflection and team accountability can enhance physician sensitivity and likeliness of acting on such learning opportunities.[4,17] Furthermore, such feedback systems specific to SDM behaviors can be trialed and measured future studies.

Limitations

Our analysis has limitations. First, this study incorporated a cross-sectional design that only reflects a single conversation between the physician and patient. In several of these instances, the patient had extended conversations with residents, medical students, nurses, and/or nurse practitioners immediately prior to the recorded consult as is common at an academic hospital. It is possible that the decision-making process was initiated during these conversations and thus our transcripts do not encompass its entirety. Second, this study is limited to a small number of participants at one academic institution, so its findings may lack generalizability to the broader field. Since we had a small sample of both patients (n = 10) and physicians (n = 5), transferability is rather restrained. Also, two of the physicians only saw one patient in the study. However, small sample sizes are common in qualitative analysis and the observed patterns warrant further consideration. Third, several socioeconomic variables were not included. We did not query the physicians or patients regarding race, income, fragility, or educational level. We recognize that these variables likely influence patient comprehension and physician interaction and should be studied further.[18] Next, it is possible, but not proven, that known audiotaping of the consult may influence communication; if this is the case it is likely that it increases discussion and decision-making behaviors rather than reducing them. Finally, the SDM-Q-9 measure of patient perception may not have wielded enough sensitivity for the subtle difference in SDM behavior were aimed to observe.

Conclusion

This study highlighted the usage of both facilitative and detrimental SDM behaviors in vascular surgery and lays a foundation for improving physician interaction and transparency in clinical scenarios. Our population of vascular surgeons generally spent longer with their patients and were more adept in SDM than previous studies in primary care, glaucoma, oncology, orthopedics, and general surgery. However, doctors still employed behaviors detrimental to SDM and room for improvement was noted. Physicians asked closed-ended questions that elicited "yes/no" or brief responses, continuously interrupted patient narratives, and rarely checked for understanding from their patients. These findings pose a potential benefit in additional SDM competency training to improve elective vascular decisions. Luckily, this competency should be highly acquirable as such improvements can be informal and have been effectively demonstrated in numerous interventional studies. Further studies are needed to fully define what ranges are acceptable for "good" versus "bad" SDM with a more accurate measure than the SDM-Q-9. In the meantime, we suggest raising physician awareness about what ways they can improve SDM behavior in their practice and piloting such interventions throughout medical education.

Presentation

This study was presented at the Midwestern Vascular Surgical Society's 45th Annual Meeting, Chicago, IL; September 2021.

Acknowledgements

The authors thank the Midwestern Vascular Society for the opportunity to present this study at their conference as well as the attendees of this conference who offered valuable feedback considered in the drafting of this article.

Author contributions

A.M.W. and J.X. designed this study and received IRB approval. E.C. and A.M.W. collected consent and audio recordings, and analyzed the transcripts. All authors contributed to the development of the final article.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethics approval

Ethical approval for this study was obtained from University of Iowa HawkIRB (#201910708).

Informed consent

Written informed consent was obtained from participants before the study from all subjects in both populations. The subjects all had decisional capacity to provide written consent.

Trial registration

Not applicable.

ORCID iD

Abbygale M. Willging https://orcid.org/0000-0003-1772-6302

Supplemental material

Supplemental material for this article is available online.

References

1. Xu J and Prince AER. Shared decision-making in vascular surgery. *J Vasc Surg* 2019; 70(5): 1711–1715.
2. Xu J, Willging A and Bramstedt KA. A scoping review of the ethical issues within telemedicine: lessons from COVID-19. *J Health Soc Sci* 2021; 6(1): 31–40.
3. Braddock IIICH, Edwards KA, Hasenberg NM, et al. Informed decision making in outpatient practice. *JAMA* 1999; 282(24): 2313.
4. Friedman DS, Hahn SR, Quigley HA, et al. Doctor-patient communication in glaucoma care. *Ophthalmology* 2009; 116(12): 2277–2285.
5. Beck RS, Daughtridge R and Sloane PD. Physician-patient communication in the primary care office: a systematic review. *J Am Board Fam Pract* 2002; 15(1): 25–38.
6. Braddock C 3rd, Hudak PL, Feldman JJ, et al. "Surgery is certainly one good option": quality and time-efficiency of informed decision-making in surgery. *J Bone Joint Surg Am* 2008; 90(9): 1830–1838.
7. Levinson W and Chaumeton N. Communication between surgeons and patients in routine office visits. *Surgery* 1999; 125(2): 127–134.
8. Levinson W. A study of patient clues and physician responses in primary care and surgical settings. *JAMA* 2000; 284(8): 1021–1027.
9. Zulman DM, Haverfield MC, Shaw JG, et al. Practices to foster physician presence and connection with patients in the clinical encounter. *JAMA* 2020; 323(1): 70–81.
10. Morse DS, Edwardsen EA and Gordon HS. Missed opportunities for interval empathy in lung cancer communication. *Arch Intern Med* 2008; 168(17): 1853–1858.
11. Ankuda CK, Block SD, Cooper Z, et al. Measuring critical deficits in shared decision making before elective surgery. *Patient Educ Couns* 2014; 94(3): 328–333.
12. Moser A and Korstjens I. Series: practical guidance to qualitative research. Part 3: sampling, data collection and analysis. *Eur J Gen Pract* 2017; 24(1): 9–18.
13. Doherr H, Christalle E, Kriston L, et al. Use of the 9-item Shared Decision Making Questionnaire (SDM-Q-9 and SDM-Q-doc) in intervention Studies —a systematic review. *Plos One* 2017; 12(3).
14. Korstjens I and Moser A. Series: practical guidance to qualitative research. Part 4: trustworthiness and publishing. *Eur J Gen Pract* 2017; 24(1): 120–124.
15. Groopman JE. *How Doctors Think*. New York City: Houghton Mifflin, 2008.
16. Adamson M, Choi K, Notaro S, et al. The doctor-patient relationship and information-seeking behavior. *J Palliat Care* 2018; 33(2): 79–87.
17. Sehlbach C, Teunissen PW, Driessen EW, et al. Learning in the workplace: use of informal feedback cues in doctor-patient communication. *Med Educ* 2020; 54(9): 811–820.
18. Ruske J, Sharma G, Makie K, et al. Patient comprehension necessary for informed consent for vascular procedures is poor and related to frailty. *J Vasc Surg* 2021; 73(4): 1422–1428.